INTERNATIONAL PROJECTIONIST

SEPTEMBER 1953

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MONTHLY CHAT

PROJECTIONISTS will have their fingers crossed as the first public showings of "The Robe" are held in New York and Los Angeles. This is the first CinemaScope picture, complete with stereophonic sound, Miracle Mirror screen and the "anamorphic" lens.

As this issue of IP goes to press, the critics and the public have yet to speak their piece.

We think the Twentieth Century-Fox aspect ratio is exaggerated. So does Henri Chretien, designer of the hypogonar lens, the heart of CinemaScope.

Chretien, in New York for the premiere of his process at the Roxy Theatre, thinks the wide-angle lens in the wrong directorial hands can be ridiculous. As he puts it, wide angle is fine for spectacle. For an intimate "soul kiss", — fifteen feet wide! — never!

IP has said it before, and we'll say it again: The wide-screen in the Fox aspect ratio, 2.55 to 1, is absurd. The wide screen in a sensible ratio, an absolute maximum of 2 to 1, would be acceptable to the public. However, like everybody else, we'll wait and see what happens to "The Robe." By this time next month the returns will be in and IP will carry full reports from the premiere cities.

Which brings up something else. Exhibitors have been having a field day with wide screens of their own. The public has been cheated, gypped and robbed.

As an example, one New York news reel theatre advertises a "giant wide screen." The theatre goes Alice in Blunderland one better. "Off with his head," said the Queen of Hearts. "Off with his head and off with his feet," is the theatre's slogan. President Eisenhower makes a speech and all the audience sees is his wagging chin. The top of his head just isn't there. Bugs Bunny jumps off at the top of the screen and falls off at the bottom. The public is gypped out of half the picture, via exaggerated masking.

Also in New York, another theatre has installed a Miracle Mirror screen — with a good six inches of keystone. Watching the picture is painful because of the annoying streaks of light.

In both of these cases — and their are hundreds more throughout the country — the public is under the impression that it's the real thing — and the public doesn't like it.

The point is simply this: If we're going to have new things in pictures, let's have them right or not at all.

The public-be-damned attitude just won't work. If some exhibitors want to slit their own throats, that's okay by IP — but not when they hurt the whole industry at the same time!

SOME STRAIGHT TALK ON 3-D AND WIDE SCREEN PROJECTION

"How much *more* light do I need for my new movie system?" That's the question everyone's asking today. Now is the time for specific, *factual* data on light requirements for 3-D and expanded screen projection.

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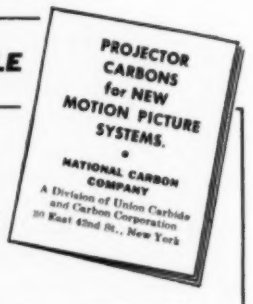
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Does CinemaScope Have the Answer?

Swirling around the 20th Century-Fox system called CinemaScope is a seething controversy. Will it work? Is it art? Will four-track film stand punishment? Here's what Fox has to say!

By THOMAS L. BURNSIDE

MOTION PICTURE production executives, nothing if not modest, are apt to go overboard in their lurid lyrics about anything new in their trade. Consider Darryl F. Zanuck's colorful comments on CinemaScope.

CinemaScope, said Zanuck, vice-president in charge of production for Twentieth Century-Fox, gives the motion picture "a potential unequalled in all the long centuries of theatrical history."

CinemaScope, he added, "is an Emancipation Proclamation on the sound stages."

Referring to CinemaScope as producing a "Technological revolution" and "providing a new artistic stimulus to our industry," Spyros P. Skouras, president of Fox, said in a formal statement:

Realistic Impact

"It may truly be said that never before have we had an opportunity to present entertainment so realistically, with such magnitude of expression and with a good third-dimensional illusion giving a sense of audience participation in the small theatres as in the large ones.

"Twentieth Century-Fox has embraced CinemaScope with unreserved faith as a means of combining the creative ability of our industry with scientific achievement to present finer pictures in CinemaScope and in Color, beginning with 'The Robe'."

Should these expressions of happy enthusiasm by Skouras and Zanuck seem a bit in the "terrific" and "colossal" tradition of Hollywood, it should be remembered that Fox is risking everything on this new medium, putting the company's entire production right on the line. Fox is gambling on CinemaScope as the cure-all for the ills of the industry.

It should be mentioned here that no spokesman for Fox has suggested CinemaScope as a substitute for good pictures. Quite the contrary. The story, well told, artistically told, well directed and well acted, is still the thing. Entertainment, not novelty, is still the goal of the producer.

However, this piece is not a critique of the art of movie-making. It is intended to be a sober analysis of CinemaScope from the projectionists' point of view. Other angles inevitably must be mentioned if the whole story is to be told. But they'll be mentioned in passing.

Briefly, CinemaScope is two systems, not one, each raising its own engineering problems, both in the making of a film and in its exhibition.

More Light Needed

First, there is the picture. Every projectionist knows by now that CinemaScope uses an anamorphic lens to produce an anamorphic effect, to project a wide image on a wide screen, thus giving great sweep to a picture. This raises a number of problems for the projectionist, the paramount one being that of sufficient light at the screen.

To the producer and the director, the wide screen allows a larger canvas on which to paint. To quote Darryl Zanuck again: "It does give us more octaves in which to tell our story and gives our actors greater range for their talents."

Not every producer and director agrees with Zanuck, some seeing the wide screen as being of value only for spectacle. One company, Para-

mount, is frankly afraid of sacrificing height in relation to width. This company, however, is known to be covertly experimenting with wide-angle lenses of the anamorphic type and has been progressively raising its aspect ratios.

To quote but one film-maker who doesn't like the wide screen, John Huston had this to say:

"I'm worried about the framing. You can show Christ and the two thieves in the wide expanse of screen . . . but how about showing Christ alone?"

So much for the picture. CinemaScope system No. 2 is sound, stereophonic to match the action on the wide screen.

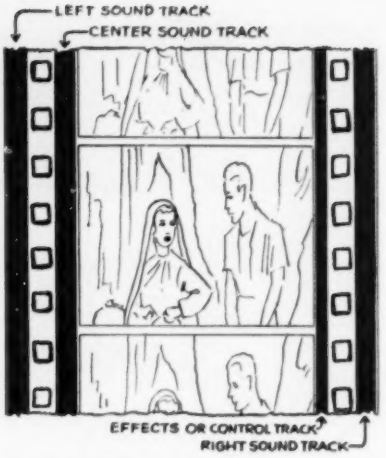
No Sync Problems

Stereophonic sound is not a Fox monopoly by any means. The Fox innovation is the striping of four magnetic sound tracks on the picture film itself, eliminating the need for a separate reproducer and a separate sound film. From the projectionists' point of view this is by far the greatest advantage of CinemaScope so far as his machines are concerned.

Any projectionist who has hopped around a projection room like a flea on a hot griddle, the usual thing when showing 3-D, will appreciate the single film of CinemaScope — unless some unforseen "bugs" appear. With 3-D, two machines are running at once for the picture, plus a reproducer for the magnetic sound. Keeping all three in sync is a job for somebody with six arms and six legs.

Just a word at this point about the befuddled exhibitor, the guy who pays the projectionist and who has to pay for the new equipment.

In the August issue of *International Projectionist*, this writer had an article, "What Price Chaos in Sound?" In that piece a leading manufacturer was quoted as urging exhibitors to purchase separate reproducers, even though they planned to play Fox films using the single strip film and the so-called "button-on" "sandwich" or "penthouse" reproducer. A survey by IP shows that this was good advice. Close to 100 pictures, perhaps many more, made by companies other than Fox, will be released this year and next, all with stereophonic sound and all requiring the separate magnetic reproducer. Projectionists, when advising on new equipment, cannot go wrong in advising exhibitors to make the double purchase, both separate and "button-on" reproducers, when plans call for playing the product of all companies.



Above is a sketch of the controversial Fox sound film, four magnetic sound tracks and the picture placed on the same film strip.

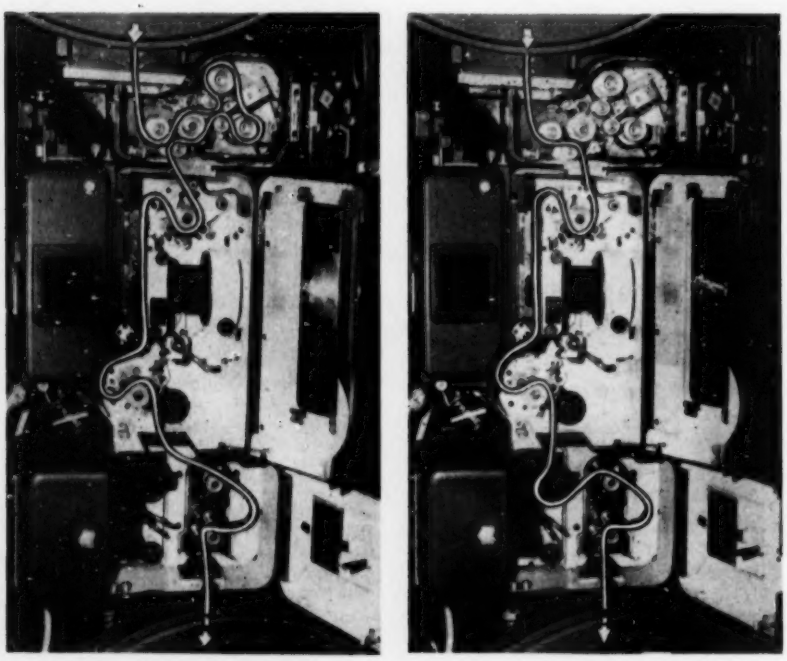
It is quite correct, as Fox claims, that CinemaScope is compatible in the sense that regular 35-mm films with optical tracks can be played in theatres equipped with the "button-on" soundhead. As illustrations accompanying this article show, the magnetic soundhead is simply by-passed when threading for optical sound, and vice versa. CinemaScope equipment, however, is not compatible for pictures in which the magnetic sound striping is on a separate film.

While Fox production and selling executives bubbled with unrestrained enthusiasm for CinemaScope, the company's technical experts wrestled with the problems inherent in bringing "The Robe", the first CinemaScope picture, to the screen. Earl Sponable, chief of the company's Research and Development Division, told IP quite frankly of the difficulties involved. However, he stated flatly that there are no "bugs" that cannot be eliminated by the application of a little engineering DDT.

Magnetic Tracks Durable

Let us take some of the criticisms and questions regarding CinemaScope and handle them in order, quoting Mr. Sponable on each. We're talking now of the engineering problems only. The artistic, as we stated earlier, are outside the area of this article.

The doubt most often expressed in the trade press and by proponents of the double film stereophonic sound



Film threading procedure for projectors on which a "penthouse" magnetic soundhead has been installed is illustrated above. The picture on the left shows the path of the film when the four magnetic sound tracks of CinemaScope are being reproduced by the penthouse soundhead. The single-track optical sound reproducer is by-passed. In the right picture is shown the same projector threaded for standard single-track optical pickup.

Nights when the stars come down . . .

Nights now—lucky audiences are viewing modern movies as they sit in their cars—movies spectacular in close-up and depth of picture and sound—brilliant in color. Problems were met and solved before the public could have these innovations—many of them solved in co-operation with the Eastman Motion Picture Film Service.

Branches are located at strategic centers; inquiries invited. Address:

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342 Madison Avenue	137 North Wabash Avenue	6706 Santa Monica Blvd.
New York 17, N.Y.	Chicago 2, Illinois	Hollywood 38, California

system is this: Four magnetic tracks on one film will not stand up under the pounding of day-to-day projection in a theatre!

Not true, said Sponable! He stated that in independent tests made by Eastman laboratories, in which film was actually punished severely, a loop with four tracks was passed over a magnetic soundhead more than 2,000 times without any deterioration in sound quality. This is well over four times the life of a film in theatre use. In tests made by Fox, he added, a loop was run through some 4,000 times without serious deterioration in sound quality.

The worry on the part of critics has been that sound tracks, right on the edge of the film, would wear badly. This Fox engineers deny.

Demagnetization of Tracks

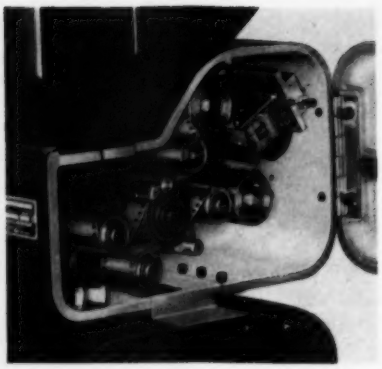
It has been said that the steel projector sprockets will somehow demagnetize the sound tracks with disastrous results.

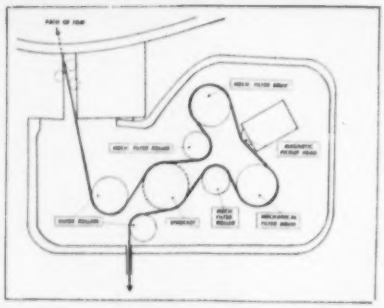
Mr. Sponable told this writer that he and his engineers had been worried about this possibility and had considered methods to overcome it. However, exhaustive tests showed that no demagnetizing resulted and therefore any revolutionary changing of the sprocket system or material was unnecessary and undesirable.

Sponable used the word "poppycock" in referring to demagnetizing charges. He pointed out, too, that if demagnetizing could occur in the case of the single-film system, so could it occur in the case of the two-film system requiring a separate reproducer. According to the Fox research chief, it occurs in neither system.

There may be some significance in Mr. Sponable's admonition to projectionists to make sure that their equipment is properly demagnetized once or twice a year. This advice, he said, is not peculiar to Fox and CinemaScope. Projector manufacturers urge that this be done even with equipment using optical sound.

A little may be interjected here on magnetic sound and on striping methods for the tracks. Numerous methods for the striping are available, but the basic material to be magnetized is the same in all systems, a form of iron oxide. The oxide is ground exceedingly fine, much finer than is the pigment in paint, and is





The above photograph and diagram show the film-driven sprocket and roller system, and the magnetic pickup inside the magnetic reproducer. The soundhead illustrated is the new Simplex X-L model. The diagram shows the threading procedure for the four-track CinemaScope film as it passes through the "penthouse" soundhead on its way to the aperture.

suspended in a binder. This is then applied to the film strip, highly polished and then exposed to the magnetizing process. There are many advantages to the producer in magnetic as opposed to optical sound tracks, an important one being immediate playback. Others are greater fidelity, an absolute "must" in the case of stereophonic sound.

For the projectionist, Mr. Sponable, quoting from a manual for the theatre now being prepared by Fox, had this to say:

Simple System Required

"Magnetic sound tracks are used with CinemaScope principally because of the simplicity of the reproducing equipment and for the better technical performance which is required due to the use of somewhat narrower tracks and the demands of stereophonic sound. Stereophonic recording requires that at least three tracks be used and extreme difficulty would be experienced in the maintenance of theatre sound equipment if optical systems, exciter lamps and photocells were to be kept within narrow performance limits relative to each other.

"Magnetic sound, of course, has its own peculiar problems in the field . . . In general it can be said that with reasonable care and under the customary circumstances in projection rooms, the use of magnetic tracks need cause no alarm.

"Although tests of magnetic film have been made to determine its susceptibility to erasure or the introduction of noise by deliberate exposure to the usual electrical apparatus, such as transformers, motors, generators and rectifiers and no serious effects have been found, it is wisdom to avoid subjecting the magnetic tracks to strong electric fields. If the handling is confined to the usual rewinds, carrying cases and projection apparatus, it is not expected that magnetic film will suffer any more from field use than optical tracks do in their own peculiar way. Obviously, by deliberate intent, magnetic tracks could be ruined, but for that matter so can optical tracks."

The Magnetic Soundhead

It is plain that everything in the immediately preceding paragraphs applies to any magnetic film system, the CinemaScope single strip sound-on-film or the separate reproducer system using two films.

Illustrated in this article is the soundhead used with CinemaScope. The one shown is by Simplex, but all manufacturers in this field either have such reproducers in production or will go into production shortly. Except for minor refinements and differences in design, they are all essentially the same.

This soundhead is installed, as the photograph shows, between the upper magazine and the projector casting. Because of this arrangement, the picture *precedes* the sound on the composite film and a standard displacement of 28 frames has been adopted. Therefore adaptor plates must be used on the film path length, between the picture aperture and the sound pickup head, adjusted to meet this offset on the various models of projectors. It may be necessary also to change the upper magazine type or use an adaptor plate to fit the magazine to soundhead. Projectionists should check their specific equipment situation at the

(Continued on page 27)

Stereoscopic Projec ion and Photography

There are three, and three only, methods of stereoscopic projection in the theatre. Two, the anaglyph and the parallax barrier, have been tested and discarded, leaving the field to the familiar system using polarization.

By ROBERT A. MITCHELL

II - *Third Dimension Projection Processes*

STEREOSCOPIC photography for motion pictures is a much simpler procedure than the exhibition of stereoscopic pictures after they have been made.

In 3-D photography we are concerned only with the production of left-and right-eye pictorial records by means of two cameras, the lenses of which are separated by an interocular distance of three or more inches. In the exhibition of the finished 3-D pictures we must utilize some principle by which the left-eye photograph is presented only to the left eye of the observer, and the right-eye photograph only to the right eye, the two separate images merging into a single three-dimensional impression of true stereopsis.

How are these rather difficult viewing requirements to be met? The stereoscopic effect is damaged, we know, if the left eye perceives even a trace of the right-eye image, and *vice versa*. In addition, the two homologs, or pictures, of the stereopair must be developed and printed to the same degree of contrast and density, and they must receive equal illumination when shown.

Projection Is Problem

The exhibition of "still" stereograms is not very difficult if we do not attempt to project them on a screen. The stereograms, comprising prints of the left and right homologs, or pictures, mounted side by side on a card, may be viewed through a binocular instrument called a stereoscope. The stereoscope, which consists of a picture holder and two lenses, one for each eye, allows the left eye to see only the left homolog and the right eye the right homolog. But only one person can look through a stereoscope at a time.

Whenever we wish to present a photograph to a large audience we must present it highly magnified on a screen. This is a simple matter in the case of ordinary 2-D photographs, but when we try to present stereograms *stereoscopically* we encounter a tough problem. How are we to present to each eye of hundreds of pairs of eyes, or even thousands of pairs, only that one of two images intended for it?

Possible for Theatres

It is possible, of course, to extend the theory of the stereoscope to picture projection in a theatre by using two screens erected side by side and supplying each member of the audience with a telescopic binocular viewer which must be held rigidly in one fixed position. No theatre audience would submit to such punishment and we are thus faced with the necessity of projecting both pictures in superposition on a single screen, and of finding some means whereby the two superimposed pictures may be separated optically and each directed to the correct eye of each observer.

There are three, and only three, methods of performing this very difficult optical feat.

One method involves a special grid, called a parallax barrier. This conceals the left-eye image from the right eye, and the reverse — a purely geometrical expedient. The other two methods provide selective lightfilters through which the pictures must be projected and viewed. None of these systems is perfect.

Parallax Barrier 3-D

The parallax barrier 3-D method,* developed very extensively in the Soviet Union by S. Ivanov, requires an intricate grille composed of many thousands of fine wires positioned in front of the screen. Throughout a very limited area in the theatre auditorium each patron, by moving his head to the right or left to locate the most favorable viewing position, obtained a true 3-D effect when the wires of the grid concealed the left eye image from the right eye, and the right eye image from the left eye.

The grid system in this crude form was given a practical test by Ivanov in 1940. It proved so unsatisfactory that it was modified to a system utilizing two synchronized projectors and a screen made up of hundreds of small conical lenses mounted on plate glass. Even though the results were fairly good in a film called "Robinson Crusoe", shown in a small Moscow theatre in 1947, it was obvious that only a limited portion of the auditorium could be used, and observers complained that the 3-D effect was lost the moment the head was moved. We can hardly expect movie patrons to sit like equestrian statues during a movie show.

Ducos du Hauron, of Paris, a pioneer in the field of color photography, suggested as long ago as 1895 that images of the two stereoscopic pictures be printed in specially

Next Month in IP

Space limitations have forced several promised articles out of this issue of *International Projectionist*. These, our own "dictionary of technical terms" and a piece on theatre television, will appear in October.

Also in the October issue will be a full report on the CinemaScope openings, another piece on stereoscopic projection by Robert A. Mitchell and other important articles, plus a see-at-a-glance chart showing the proper lens sizes for various throws and screen sizes.

* For further information on Ivanov's parallax barrier 3-D system see "International Projectionist" for the following three articles: "Parallax Barriers in Stereoscopy and TV," by Sam H. Kaplan, August, 1952, page 12; "Startling Soviet Films," December, 1947, page 17; "Russia's Three-Dimensional Motion Pictures," by S. Ivanov, April, 1941, Page 12.

selected dissimilar colors and superimposed on a single photographic plate. By viewing this composite image through "analysing" spectacles consisting of two differently colored gelatins, we get the "anaglyph," familiar in the form of 3-D novelty reels, first introduced in 1924 and resumed in 1935 under the name of "Audioscopiks."

To understand the action of the anaglyph viewing glasses, look at red and blue printing or pictures, first through a red filter and then through a blue filter. Through a red filter the blue appears black and the red disappears entirely. Conversely, through a blue filter the red appears as black and the blue vanishes, or almost vanishes.

The most nearly perfect anaglyphic 3-D involves the use of two homologous black and white (uncolored) prints and two synchronized movie projectors. A cyan filter is placed over the lens of the left projector, and a red filter over that of the right projector. The projected picture is thus a composite of red and cyan images. Cyan is a strong greenish blue color, a combination of spectral green and spectral blue violet.

Single Film "Audioscopiks"

The process was handled in a simpler, though less perfect, manner in the "Audioscopik" reels. A single film was used, and this was shown in the usual way without any filter over the projector lens. On this film was printed the left eye image in red dye and the right eye image in cyan dye. The movie patron wore an analyser having a left eye cyan filter and a right eye red filter. However, a few gremlins, in the form of spectral and transmission deficiencies of the cyan dye popped up to bedevil the process. Each eye could perceive just a trace of the image not intended for it. "Ghosting" is thus one of the defects of the single strip anaglyph process.

Another serious limitation of anaglyph 3-D is the impossibility of using the process for natural color photography.

When we come to the polarized light process we arrive at the end of all stereoscopic possibilities for motion pictures. Nevertheless, the potentials of this method are largely unexplored and are capable of materializing in many interesting forms.

The Polaroid Process

The present commercial polarized light 3-D projection process is exactly analogous to the experimental two-strip setup which gives the best anaglyph stereoscopy. But instead of colored filters over the lenses of the two synchronized projectors, we have polarizing filters. The polarizing axes of the two are set at right angles to each other and it is standard practice to have the axis of the left hand polarizer slanting 45 degrees to the right (as we face the screen) and that of the right hand polarizer 45 degrees to the left. The observer wears analysing viewers having corresponding filters. These enable him to see only the left image with the left eye and the right image with the right eye.

Polarized light demands a projection screen having a metallic reflecting surface, usually a tarnish-resistant alloy of aluminum in a form that gives maximum diffusion of the projected light throughout the auditorium. Regular white matte screens cannot be used because they depolarize the light, undoing the work of the polarizers placed over the projector lenses.

It is a natural law that free metals reflect polarized light without changing it, while non-metals and chemical compounds depolarize it. Matte screens are surfaced with titanium oxide, zinc oxide and other pure-white chemical compounds.

The Aluminum Screen

Aluminum screens, even though they must be used for 3-D work, have several advantages and disadvantages. They are great light savers in long, narrow auditoriums because they throw most of the projected light forward. They reflect all colors equally well if kept clean, and so provide a perfect rendition of color films when high-intensity arcs are used.

On the debit side we find that aluminum screens do not tolerate wrinkles or creases. Even the smallest wrinkle or the most carefully made seam shows up like a sore thumb. No matter how expertly surfaced, most aluminum screens impart a noticeably streaky appearance to the picture. And the spectacular characteristics of this type of screen exaggerate and alter image contrasts to give a comparatively harsh, grainy picture.

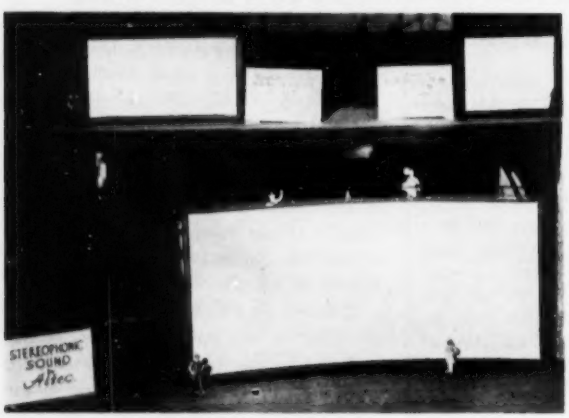
Even an aluminum screen may depolarize light to a slight extent if it be improperly coated, dirty or perforated. The aluminum coating must be thick enough to hide the cloth or plastic material of which the screen is made. If light is able to penetrate the aluminum paint, then it is certain that some depolarized light will be reflected into the audience.

The aluminum paint must contain only particles of pure, unoxidized metal as its pigment. If white paint be mixed with the aluminum, or if the metal particles are coated with oxide, there will be more or less depolarizing and ghosting. It is interesting to note that an aluminum screen washed with a linty cloth may be improved for regular projection but practically ruined for 3-D.

Sound perforations in an aluminum screen are the most common cause of ghost images. It happens that depolarization occurs whenever the light from the projectors strikes the aluminum surface a glancing blow. There are angles of incidence which must not be exceeded. A screen isn't very thick, but it's thick enough to

(Continued on page 22)

LOBBY DISPLAY SHOWS PROGRESS TO PICTURE PATRONS

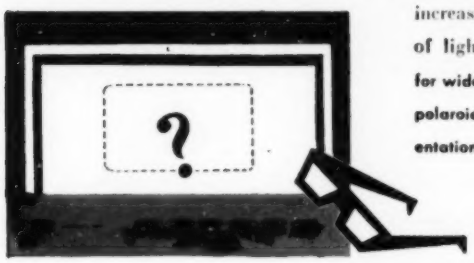


Here's how the Shea Buffalo Theatre let its patrons in on the secrets of wide-screen and stereophonic sound. Displayed in the lobby is a scale model of the new 28 by 62-foot giant screen just installed in the theatre. This curved screen is the new Magniglow Astrolite produced by the Glowmeter Corp., of Buffalo, and the Radiant Manufacturing Co., of Chicago. The other screens are for purposes of comparison. Stereophonic sound is by Altec.

Announcing the Sensational New

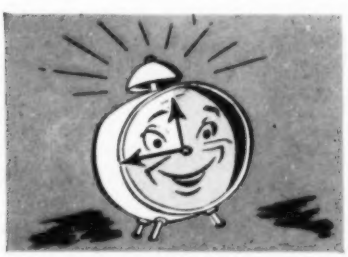
Strong 'SUPER 135' PROJECTION ARC LAMP with the INFRA-BAN BEAM-COOLER UNIT

● **The only lamp designed especially** to project the tremendously increased volume of light required **for wide-screen and polaroid 3-D presentation.**

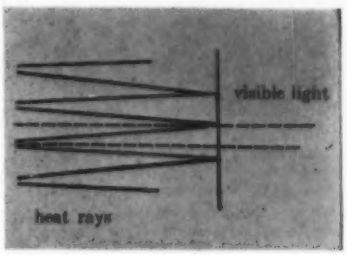


● Burning the new 10 mm "Hitex" carbons at 135 amperes, or 11 mm regular carbons at 120 amperes, the "Super 135" projects a much higher level of illumination than any other lamp. In impartial tests the foot candle meter **proves** that the "Super 135" is **the most powerful of all lamps,** and **you can't argue with a light meter.**

● Accommodating a 20-inch carbon, the "Super 135" is **the only Reflector Arc Lamp which can burn** the 10mm "Hitex" Carbon at 120 amperes **for a full hour** as required by the new 3-D 5000-foot reels. Other lamps which accommodate only 14-inch carbons can operate at this amperage no longer than 48 minutes without retrimming. The increased volume of light projected by the "Super 135" is especially important with 3-D because of the 60% light lost to the viewer, resulting from the use of polaroid filters. The "Super 135" furthermore maintains a screen light that, in intensity and color value, is constant and identical to that of the associated lamp which is burning simultaneously.



● The new **Infra-Ban Beam-Cooler Unit,** positioned in the path of the light beam, makes unnecessary any troublesome cooling contraptions in the lamphouse such as water coolers, etc. The Infra-Ban unit permits the free passage of the visible light rays while diverting the heat rays away from the aperture and back into the lamphouse from which heat is rapidly withdrawn by a mechanically induced air flow out through the stack. Thus, Strong has made possible a tremendous increase in usable light without a corresponding increase in heat at the aperture.



● The position of the positive arc crater at the exact focal point of the reflector is automatically maintained, without manual adjustment by means of Strong's exclusive Lightronic crater-positioning system. Each carbon is advanced by a separate motor, the speed of which is governed by the Bi-Metal Lightronic Tube. A stream of air directed just above the arc stabilizes its burning and prevents the deposit of soot on the reflector.

● Unit construction, whereby the various components are instantly removable, permits ready adaptation to any future developments in carbons or burning techniques.

● For further information on projection arc lighting of 3-D or wide-screen pictures by any system, address Department 3-D.

THE STRONG ELECTRIC CORPORATION

31 City Park Avenue **Toledo 2, Ohio**

Please send details on Strong "Super 135" Projection Arc Lamps.

NAME _____

THEATRE _____

STREET _____

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NAME OF SUPPLIER _____

"The World's Largest Manufacturer of Projection Arc Lamps"

Here's Proof

WIDE SCREEN AND STEREOPHONIC SOUND ARE HERE TO STAY!

MGM Says—

"ALL MGM PICTURES WILL BE FILMED IN WIDE SCREEN and STEREOPHONIC SOUND"

MOTIOGRAPH

NOW OFFERS THE MOST FLEXIBLE LINE OF STEREOPHONIC SOUND SYSTEMS

Motiograph Series A Systems reproduce 3-track sound recorded on a separate sound film—the recording method used by most studios.

Motiograph Series B Systems reproduce 4-track sound on the picture film—The Fox method.

Motiograph Series C Systems reproduce sound recorded on both picture film and separate sound film.

Systems are available for 800, 1000, 1300, 2000 and up to 5000 seat theatres.

MORE THAN 71 GREAT PICTURES FROM SUCH STUDIOS AS COLUMBIA, PARAMOUNT, UNIVERSAL AND WARNER BROTHERS WILL REQUIRE SERIES A SYSTEMS WITH A SEPARATE MAGNETIC SOUND REPRODUCER

These pictures include Warner Brothers:
"A Star is Born" starring Judy Garland
"Blowing Wild"
"Mr. Roberts"
"Lucky Me" starring Doris Day
"Island In The Sky"
"East of Eden"
"Rear Guard" starring Guy Madison
"Helen of Troy"
"Calamity Jane"

Of 12 forthcoming Paramount stereophonic sound productions are included:
"The Caddy" with Martin and Lewis
"The War of the Worlds"
"Cease Fire"
"Those Redheads From Seattle"
"Flight to Tangier"

A number of Universal's forthcoming releases will include stereophonic sound recording. Among the major productions are:
"Thunder Bay"
"The Man From the Alamo"
"Abbott and Costello Meet Dr. Jekyll and Mr. Hyde"
"Wings of The Hawk"
"The Stand at Apache River"
"The Golden Blade"
"The All American"
"East of Sumatra"
"The Glass Web"
"Back to God's Country"
"The Veils of Badgad"
"Tumbleweed"
"Walking My Baby Back Home"

★ ★ ★ ★ ★ ★ ★

Such great Fox productions as "The Robe", generally publicized as potentially the greatest boxoffice hit of all time, will require Series B Systems for sound reproduction. Theatre owners wishing to profit from the 71 pictures to be released with stereophonic sound on a separate sound film will purchase Series A Systems now.
Those who buy now will not be buying potentially obsolete equipment as Series A Systems can be quickly and economically converted to reproduce stereophonic recordings on the picture film should this method become the standard of the industry.
Motiograph Stereophonic Sound Systems, which include Altec-Lansing celebrated "Voice of The Theatre" loudspeaker systems, are priced at $4,925.00 upward.

NOW IS THE TIME TO INSTALL A WIDE SCREEN AND STEREOPHONIC SOUND

If you haven't placed your order, we suggest that you do so without further delay so that you can play as early as possible the above big money-making pictures now being released. You will, in almost no time, have them paid for many times over from increased business.

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The Rebirth of a Theatre

How one Los Angeles projectionist saved his theatre by doing a thorough house-cleaning of the projection room and installing new equipment and a new screen.

By FRANK McBRYDE
Member of IA Local 150, Los Angeles, Calif.

THIS is the story of the rebirth of Los Angeles' Picwood Theatre, a 1,500-seat house that was set to shutter because it couldn't handle the new techniques of 1953. It is the story of how the Picwood, 10,872 Pico Boulevard, was brought back to life by Hal Goldstein, chief projectionist.

Built as a luxury neighborhood house in 1949, the theatre was found by the major studios to be ideal for sneak previews. On this basis it became extremely popular — until the advent of the new mediums, 3-D, wide-screen and stereophonic sound, left it high and dry. With obsolete equipment in the projection room, the Picwood couldn't play anything but standard 35-mm. The studios took their preview business elsewhere, and the Picwood patrons followed.

Goldstein talked things over with the management and was given *carte blanche*. His first project was a thorough house-cleaning of the projection room as a starter in a rehabilitation project. Then came a new screen and wiring for stereophonic sound. Today business is booming again at the Picwood. It is again one of the best equipped theatres on the West Coast — and it's again the favorite preview house for the major studios.

All Equipment Out

The first step in the modernization process was the removal of all equipment from the projection room, with the exception of the Model 242 RCA projector and two RCA sound heads.

New equipment installed on Goldstein's advice consisted of the following:

Four new Simplex heavy duty bases.

Four new Peerless Magnarc lamps.

Huff Hydro Carbon Coolers.

Four new X-L heads with selsyn interlocking motors.

Two new Simplex sound heads with magnetic reproducers.

Four 5,000-foot magazines.

Six Atlas pre-amplifiers (two for each head).

One stereophonic rack with four Atlas 50-watt amplifiers, plus one spare amplifier.

One interlocking panel for the projectors.

One stereophonic fader with monitor.

One 24- by 42-foot Daylight screen.

Three Altec Lansing speakers and twelve effect speakers.

Two McColphin Christie 90-amp, 3-phase rectifiers.

Projectionist Frank McBryde is shown at the Picwood's interlocking panel. Shown are the optical and stereophonic faders.

Space at Premium

Since the projection room at the Picwood is only 24 by 12 feet, every inch of space was of extreme importance. Hence, the rectifiers and the rheostats were placed in a room beneath the projection room. The 80-160 amp generator, part of the old equipment, remained in its former location outside the auditorium.

The interlocking panel was constructed by Ed Traut, a studio electrician. The panel is a little over three feet high and is almost two feet wide, and its color code of red for left and blue for right was carried throughout the entire installation. The panel has three rows of rotary micro switches, four to a row, with 226 micro switches ganged behind the twelve rotary switches. Each switch has three positions, "red control," "blue control," and "off." The top row of four switches are for each machine, switches on the second row are the dowser selectors, while the four bot-

(Continued on page 29)

This is the refurbished projection room of Los Angeles' Picwood Theatre. On the left is Dean Griffin, projectionist, and on the right is chief projectionist Hal Goldstein.

COLOR TV . . . *and How it Works!*

A SYSTEM of "compatible" color television using the Radio Corporation of America tri-color tube has been tentatively approved by the Federal Communications Commission and final approval is expected very shortly. This article answers some of the questions projectionists may have about color Tv. How much will it strengthen Tv in the competitive struggle between the film theatre and the living room Tv set? Also, how does it work?

By JAMES MORRIS

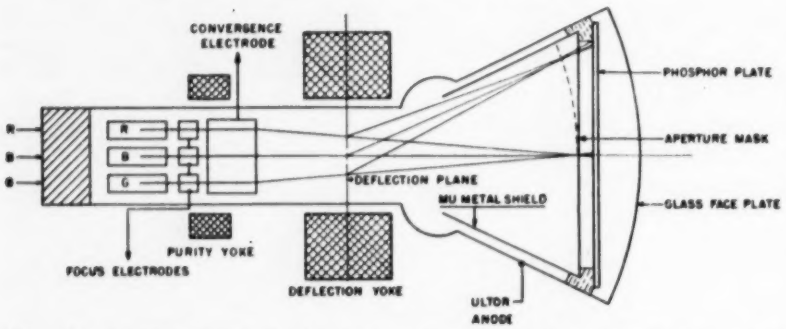
The color Tv system expected to meet the FCC approval this month was proposed by the National Television System Committee, an industry-wide group including manufacturers and broadcasters. It was also proposed to the FCC in a separate petition by RCA and the National Broadcasting Co.

RCA is a pioneer in the color television field and probably the most important force in its development. When the FCC gives final approval to the proposed standards, RCA and NBC, working together, will do the following:

1. Expedite production of color receivers, tri-color tubes and broadcasting and studio equipment. 2. Commence broadcasting compatible color Tv programs which will be offered to commercial sponsors and to stations throughout the country.

Demonstrations Planned

If FCC approval comes in time, NBC will begin to experiment with "color premieres" of its major programs on the 28th of this month. It is also planned to equip the 300-seat Bijou Theatre in New York City with movie-size color Tv for public demonstrations until mass production of receivers is under way.



Above is a simplified diagram showing the principle of a present RCA tri-color tube. Electron beams representing the three primary colors pass from the focus electrodes in the neck of the tube to the color sensitive phosphors on the inside surface of the tube's face. The beams are positioned and deflected to the proper spot on the picture surface by the electro-magnetic purity yoke and deflection yoke and the electrodes shown in the diagram.

The big virtues of the RCA and NTSC system in the eyes of the Tv industry are its "compatibility" and the fact that it is all-electronic. When stations broadcast using the RCA compatible color Tv system, nothing whatever need be done by the owners of Tv sets now in homes if they desire to receive color programs in black and white. The system is all-electronic in the sense that it reproduces color through the tri-color tube without the need for disks, drums or motors as required by another but non-compatible system developed a few years ago by the Columbia Broadcasting System. CBS has announced that it will retire in favor of the compatible method.

RCA and NBC's plan of action leaves the impression that color will almost immediately become an important force in Tv, but that is not the case. Although its eventual predominance over black-and-white Tv is probably beyond question, there are important stumbling blocks that will slow down the expansion of color Tv. One is the price of sets. They are expected to cost from $800 to $1,000 with a 14-inch tube when first marketed. Another factor is the already high cost of producing Tv programs. Almost doubled expenditures on the part of sponsors for color shows will be difficult to bear.

Set Supply Limited

Limited production of color receivers may start before the end of 1953 if FCC approval comes soon enough, but according to present estimates it will be 1955 before heavy volume production is under way and prices of

NBC's Dolores Gray appears before the camera in a field test of the RCA color system.

sets can be reduced. Many people in the film industry feel that the real enemy of the exhibition business so far as Tv is concerned is not color, but subscription Tv, the box office in the home, which could exploit high-quality first-run movies. This idea also soon will be before the FCC.

Before explaining the RCA Color television system, it may be useful to review briefly how black-and-white Tv works. Pictures are produced by means of an electronic scanning process in which a stream of electrons in the camera tube sweeps across, or scans, the image of the scene being televised.

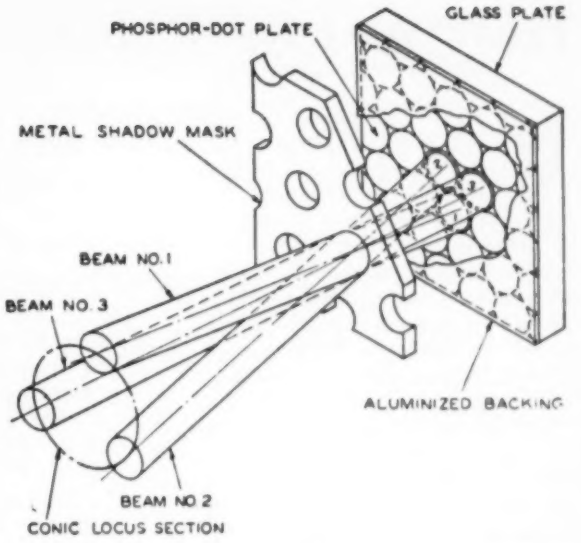
Dots Glow in Color

The brightness of any given part of the scene at the instant it is being scanned is translated into electrical currents. These currents are transmitted through space as radio waves. As the radio waves reach the receiver, an electron beam, sweeping back and forth across the luminescent phosphors on the inside of the picture tube, converts the incoming waves to spots of light varying in intensity from zero (black) to maximum (white).

Colors are reproduced in the RCA tri-color tube in a manner quite similar to that used in black-and-white Tv — also by the use of phosphors on the inside face of the tube. In black-and-white Tv the phosphors glow only in white, but in color the electron beams are directed to small phosphor dots, each of which, when hit by an electron beam, glow in one of three primary colors. Red, green and blue are generally used in Tv. Thus, when the color-sensitive phosphors are exposed to electron beams, the primary colors blend, and it is possible to reproduce the original scene.

How Camera Works

At the camera end, the RCA color system now works as follows: Light coming from the scene being televised passes into the color camera and then through a series of mirrors to three separate camera tubes, one for each primary color. These mirrors have the property of "splitting" the light from the scene into three components — blue, green and red. Each mirror reflects one of the components of the light, while passing the other components, thus separating the light into three colors. A single-tube camera is under development.



This diagram shows how the electron beams representing the three primary colors are directed at a particular phosphor dot which will reproduce a specific color. The beams converge and pass through small holes in a metal shadow mask, and then diverge again for a short distance until reaching the proper phosphor dot. The portion of the tube represented in this drawing is a small section of the shadow mask and the face of the tube.

Another tri-color tube, the Paramount-Lawrence tube, is under development at Chromatic Television Labs. in San Francisco. This is claimed to be the simplest tri-color tube to manufacture, but it is not yet out of the development stage.

When color television broadcasts begin in studios throughout the country many different groups within the IA will be involved in the more complicated studio operation that color requires. These include not only projectionists and Tv cameramen, but set designers, carpenters, electricians, property men, film editors, cartoonists, makeup men, hair stylists, and wardrobe personnel.

Chicago Trade Show to Crack Records

THEATRE equipment manufacturers, anxious to display and demonstrate the varied new equipment necessary for showing motion pictures made in the 3-D and wide-screen processes, have completely bought out all available space at the annual trade show of the Theatre Equipment and Supply Manufacturers Association to be held October 31 to November 5 at the Conrad Hilton Hotel in Chicago.

The event will be by far the largest display of theatre equipment ever presented to the industry, according to Roy Boomer, secretary of TESMA. Participating will be two other groups, The Theatre Owners of America and the Theatre Equipment Dealers' Association, both of which will be heavily represented.

The show is open to everyone. It is not necessary to belong to any organization to attend. Manufacturers plan to have their top engineers at the show to answer questions. Other features of the show include an open forum on present-day motion picture problems and a number of social functions. Twentieth Century-Fox will stage a demonstration of CinemaScope. Hotel accommodations may be secured by writing direct to the Conrad Hilton Hotel.

Among the equipment manufacturers to be represented at the show are: The Altec Lansing Corp.; C. S. Ashcraft Mfg. Co., Inc.; Automatic Devices Co.; The Ballantyne Co.; Bausch & Lomb Optical Co.; Century Projector Corp.; Continental Electric Co.; Da-Lite Screen Co.; DAWO Corp.; De Vry Corp.; Die-cast Aluminum Speakers, Inc.; Drive-in Theatre Mfg. Co.; GoldE Mfg. Co.; Gordos Corp.; Hewitt-Robins, Inc.; Hal I. Huff Mfg. Co.; Imperial Electric Co.

Kollmorgen Optical Corp.; La Vezzi Machine Works; Lorraine Carbons, Inc.; Motiograph, Inc.; National Carbon Co.; National Theatre Supply; Neumade Products Corp.; Norpat Sales, Inc.; Polaroid Corp.; Radiant Mfg. Corp.; Radio Corp. of America; Raytone Screen Corp.; J. E. Robin, Inc.; Society of Motion Picture and Television Engineers; The Strong Electric Corp.; the Superior Electric Co., and the Wenzel Projector Co.

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How to Check for – and Get – Maximum Lig h

WIDE-SCREEN and stereo 3-D motion pictures have focused attention on the need for maximum illumination from projection equipment. During the past several years considerable information on the subject of screen light has been published by the *International Projectionist*, the *Journal of The Society of Motion Picture and Television Engineers*, and by other publications. The Motion Picture Research Council has now brought this material up to date and assembled it into the following article to aid projectionists in determining the following:

(1) Whether your screen is receiving enough light.

(2) If not, what is causing the trouble.

There are two general reasons why your screen may not be receiving sufficient light. First, one or more parts of your equipment may not be capable of doing the job they should be doing. (For example, a lens which is too slow.) Second, one or more parts of your equipment, even though adequate, may not be properly adjusted. (For example, the optical alignment may be off.)

By carefully working out the following instructions step by step, an illumination check may be made with a light meter in about 30 minutes. If light output is found to be below the capacity of your equipment, then a thorough check, also described in this article, should be made.

Table Gives Data

Fourteen different combinations of carbons are listed in the table reproduced on this page. The average operating amps and arc volts are given for each combination. The first four are used with condenser lenses whose F numbers are shown. The other horizontal columns in the table correspond to different speed projection lenses, coated and uncoated, and with and without adjustment for maximum light. The screen lumen figure is for systems with no shutter, film or filters of any kind, and assumes a side-to-center light distribution as shown.

To tell how many screen lumens your system can furnish when in good operating condition and adjusted for top efficiency, locate the particular carbon combination you are using, look down the column to the horizontal row which corresponds to the type of your projection lens and read the figure.

The Research Council and the SMPTE now also have available two forms which enable the projectionist to list conveniently the ratings of his equipment and estimate the total amount of screen lumens produced by each projector. A sample of one of these forms, with figures from an imaginary projection system already typed in, is reproduced on the next page. It contains two screen diagrams and also shows calculations for using these readings to get a screen lumen figure for each projector. If you follow this same procedure and find the number of screen lumens produced by your projectors, you can check their performance against the table and determine how efficient they are.

How to Use Table

As an example of how to use the table, and the calculations of the form, let us consider a projector which uses 8-mm positive and 7-mm negative carbons. This combination is found in two columns, 11 and 12, of the table. If the side-to-center ratio for the projectors, as determined by the light meter readings, is greater than 65%, we can assume the adjustment is not for maximum light. You can see from the table that the available lumen figure for such a projector with a 5-inch F/2.0 coated lens is 10,300 lumens with 60 amps, and 13,000 lumens with 70 amps.

If the amperage of this particular arc lamp were 64 amps, its potential

TOTAL SCREEN ILLUMINATION (LUMENS) AVAILABLE WITH VARIOUS CA

		(1)	(2)	(3)	(4)	(5)	(6)	(7)	
Carbon Trim	Positive	Nat. H.I. 13.6mm x 22"	Nat. H.I. 13.6mm x 22"	Nat.Super H.I. 13.6mm x 22" "Hitex"	Nat.Super H.I. 13.6mm x 22" "Hitex"	Nat.H.I. 9mm x 20"	Nat. H.I. 9mm x 20"	Nat. H. I. 10mm x 20"	"S 7x12
	Negative	Orotip 7/16" x 9"	Orotip 1/2" x 9"	Heavy Duty Orotip 1/2" x 9"	Heavy Duty Orotip 1/2" x 9"	Orotip 5/16" x 9"	Orotip 5/16" x 9"	Orotip 11/32" x 9"	Or 6m
	Arc Amps	125	160	170	180	75	85	100	
	Arc Volts	68	77	70	74	52	58	6C	
Lamp Optical System f/No. of Condenser Lens or Mirror		CondenserLens f2.0	CondenserLens f2.0	CondenserLens f2.0	CondenserLens f2.0	Mirror 16-16½"D f1.9	Mirror 16-16½"D f1.9	Mirror 16-16½"D f1.9	Mirror
5" E.F. f/2.0 Coated Projection Lens									
Screen Light Distribution		80%	80%	80%	80%	80%	80%	80%	
Side-to-Center Total Screen Lumens		11,500	16,500	17,500	19,300	12,500	14,500	15,500	5
5" E.F. f/2.0 Coated Projection Lens – Maximum Light									
Screen Light Distribution		60%	60%	60%	60%	60%	55%	60%	
Side-to-Center Total Screen Lumens		14,500	20,500	20,700	24,800	16,000	19,500	20,000	6
5.5" E.F. f/2.5 Uncoated Projection Lens									
Screen Light Distribution		—	—	—	—	—	—	—	
Side-to-Center Total Screen Lumens		—	—	—	—	—	—	—	4
5.5" E.F. f/2.5 Uncoated Projection Lens – Maximum Light									
Screen Light Distribution		—	—	—	—	—	—	—	
Side-to-Center Total Screen Lumens		—	—	—	—	—	—	—	5

ht at the Screen

Thi article, assembled by the Motion Picture Research Council, provides a step-by-step procedure for testing your projection optical system and adjusting it for maximum light.

lumen rating will be found to be 10,300 added to 4/10ths of 2,700, which is the difference between 13,000 and 10,300. The resulting total is 11,380 lumens. This sort of calculation, called "interpolation," is done as follows:

Let us again take the example where the lumen figure is 10,300 when running at 60 amps, and 13,000 when running at 70 amps. This is shown in the table. But what if the amperage is neither 60 nor 70, but halfway between? Obviously the lumen figure sought will be somewhere in between 10,300 and 13,000. The difference between 13,000 and 10,300 is 2,700, and half of this is 1,350. Adding 1,350 to 10,300 gives 11,650 screen lumens, corresponding to 65 amps. It is easy to see that this calculation can be worked out by percentages for any amp rating between 60 and 70.

In using the table, you may possibly find that the projection lenses listed do not match those of your machines. You might, for instance, have coated F/2.5 lenses or even uncoated F/2.0 lenses. An uncoated lens transmits about 20 percent less light than a coated lens and *vice versa*, so you can still get the correct potential lumen figure for your machines by increasing or decreasing the figure on the table by 20 percent as the situation requires. However, you should have coated lenses.

The actual lumen figure for your projector, which you work out by means of the calculations on the Research Council form accompanying this story, should be at least 80% of the top lumen figure for the same type of equipment as shown in the table. If it is less than 80%, you should continue with the equipment check described here. Even if your figure is greater than 80%, you may still wish to continue the check in order to get all the light you possibly can. It is possible to make gains both by alignment and focus corrections. Whether or not top light output can be obtained depends on how carefully the following instructions are carried out.

Optical Train Check

Many projectors now in use were manufactured before F/1.9 and F/2.0 objective lenses were available. Therefore, the aperture heat shields, parts of the rear shutter and other obstructions may block the passage of light that would ordinarily be transmitted by a faster lens. A template for checking the optical train is available from lamp suppliers for use with F/2.0 lamp optics. To use it:

(a) Insert the template through the cone of the lamphouse in a vertical plane. It should pass through all openings until the edges come in contact with the top and bottom of the aperture plate. (b) Insert the template on a horizontal plane. The edges should contact the sides of the aperture plate.

If the template will not pass this far into the optical train opening the obstruction will be evident and should be filed out, or the part should be replaced with one that will admit the template. In some cases the manufacturer may supply a kit for this purpose.

Another practical method of checking the optical train opening to be sure it will pass the cone of light from the mirror is as follows:

(a) Run a piece of string from the top of the mirror through the aperture to the top of the aperture plate opening at the film plane. If anything interferes with the straight line of the string, then it must be removed in order that the top of the film frame will receive light from the top of the mirror. (b) Duplicate this procedure from the bottom of the mirror to the bottom of the film-plane position, and also from each side.

Shutter Transmission Check

For the purpose of screen light checking, a shutter transmission of 50% may be assumed as a good average. If your check reveals less than

The lumen figure given in this chart is for a system without shutters and with optimum optical alignment. With a shutter and other light losses, the output from the projector probably will not be more than 40 per cent of the figure given on the chart.

.RBONS IN DIFFERENT PROJECTION SYSTEMS

(8)	(9)	(10)	(11)	(12)	(13)	(14)
uprex" " or 14"	"Suprex" 7x12" or 14" (New type)	"Suprex" 7x12" or 14" (New type)	"Suprex" 8x12" or 14"	"Suprex" 8x12" or 14"	"Suprex" 9mm x 14"	"Suprex" 9mm x 14"
:tip-C x 9"	Orotip-C 6mm x 9"	Orotip-C 6mm x 9"	Orotip-C 7mm x 9"	Orotip-C 7mm x 9"	Orotip-C 8mm x 9"	Orotip-C 8mm x 9"
40 27.5	42 36	50 40	60 36	70 40	65 41	75 45
11-3/8"D 2.5	Mirror 14" D f2.3	Mirror 14" D f2.3	Mirror 14" D f2.3	Mirror 14" D f2.3	Mirror 14" D f2.3	Mirror 14" D f2.3
80% ,900	80% 7,250	80% 9,200	80% 10,300	80% 13,000	80% 12,300	80% 13,800
65% ,500	60% 8,650	60% 11,700	65% 11,000	65% 14,000	70% 13,000	70% 15,000
80% ,600	80% 5,400	80% 6,850	80% 7,600	80% 9,600	— —	— —
65% ,000	60% 6,350	60% 8,400	65% 8,200	65% 10,600	— —	— —

50% shutter transmission, it may be because of adjustable shutter blades or a number of other reasons. The supply house service department should be consulted in order to determine the specific reason.

With one projectionist at the screen to read the light meter, and another to operate the projector, make the shutter-transmission check as follows:

(a) open the shutter; (b) close the dowser; (c) strike the arc and make the setting as if you were going to operate the projector, and (d) when the person at the screen is ready with the light meter, flash the light onto the screen by opening the fire shutter by hand and operating the dowser control.

Warning: Only allow light to pass through the objective lens for the shortest period in which a reading may be taken, otherwise damage to the lens may result. Readings of this type should never be taken through a Polaroid filter.

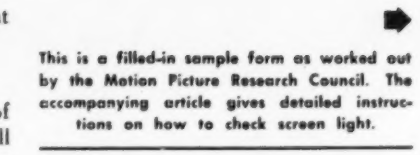
Then start the projector and take the same reading. The ratio of the two readings will reveal the shutter transmission. For example, if the "flashed" reading without the machine running, is 29 foot-candles, and the reading with the machine running is 13 foot-candles, the shutter transmission is 13/29 x 100 = 45%. This is too low. The shutter is cutting light and should be adjusted.

Alignment and Focus

In a high-intensity arc lamp, all of the brightest portion of the gas ball cannot be focused on the film plane unless the crater of the positive carbon is exactly on the optical axis of the mirror or condenser, and the axis is then aligned to pass exactly through the center of the aperture. With misalignment, the plane in focus will include either shell light — which is of lower order of intensity, and more yellow — or arc stream light, which is also of lower intensity and more blue.

Also, the image of the gas ball must fall precisely on the film plane if a maximum amount of light is to pass through the rest of the optical system. Finally, the optical axis of the projection lens must be exactly along the axis of the lamp-mirror-aperture system.

It is thus evident that unless crater, mirror, aperture and lens are all in rifle-barrel alignment along a common axis, it will be impossible to bring them into line with conventional controls. Why? Because these controls can only change working distances along the axis or tilt the mirror in various ways. This fact often creates the belief that a given mirror is too inaccurate for suitable operation, but before discarding the mirror, you should test it under conditions of correct optical alignment. If the other lamp seems satisfactory, the suspected mirror may be tested there.



This is a filled-in sample form as worked out by the Motion Picture Research Council. The accompanying article gives detailed instructions on how to check screen light.

Basic Alignment

Not only must the mechanism be so aligned as to hold the carbon crater with the gas ball in its proper position with respect to the mirror, but operation must be maintained so that the crater remains in that position during the burning of the trim. If, for example, a short grip on the positive carbon causes the crater to raise out of its proper position, then discoloration and loss of light will result, just as though the entire mechanism were out of line. This is also true of improperly designed carbon savers.

A systematic procedure for optical train alignment and adjustment follows:

1. Align the lamphouse and burner mechanism with suitable alignment tools, according to the instructions accompanying the tools. Alignment kits for most projectors may be obtained from projector manufacturers. On some of the older type bases ingenuity may be required to determine means for shimming and adjusting, but proper alignment is necessary for maximum brightness, a good field and correct color of screen light.

2. Check the numbers on the back of the mirror against the manufacturer's specifications to determine the proper working distance, which is measured from the inside edge of the mirror centerhole to the film plane. It is not safe to determine the working distance from the mirror diameter alone; as a matter of fact, one lamp manufacturer provides mirrors of three different working distances for the same lamp. Next, move the lamphouse on the base to within plus or minus 1/2 inch of the prescribed distance.

3. Set the arc at the manufacturer's recommended arc-to-mirror distance.

4. Strike the arc, (shutter running, no film in gate) and by means of the lateral and vertical mirror ad-

(Continued on page 30)

What's Your Problem?

If You've Got a Question, Send it in . . . IP Will Try To Answer it — and Pay You Too!

WHAT'S your problem? IP is all ears — and we're not only ready, willing and anxious to help you out with the answer, but we'll pay you, too! Real money!

With this issue, IP starts the ball rolling for a new regular monthly feature, a question and answer department tailored to the needs of the working projectionist.

You send in your questions, on anything at all having to do with the projection room, the screen, sound — or anything of special concern to projectionists. We'll try to get an authoritative answer for you.

If your question is of sufficient interest, we will print it, together with the answer and your name and address. *And*, if we print it, you get a check for three dollars. Should the same question be sent in more than once the earliest postmark will determine which writer gets the cash. Names of other questioners will be printed.

In any case, you will get an answer from IP, either in the mails or in the magazine.

So, get your questions in — fast! Address all letters to "Editor, What's Your Problem, International Projectionist, 19 West 44th St., New York 36, N. Y."

THEATER SCREEN LIGHT CHECKING PROCEDURE

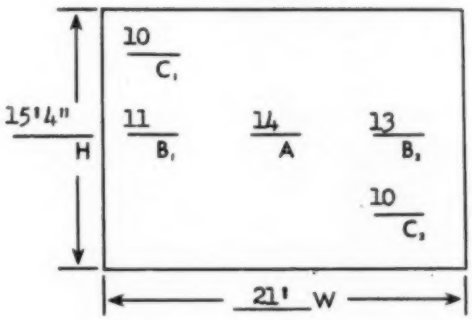
FORM NO. 2 — INCIDENT SCREEN LIGHT MEASUREMENT

THEATER Bijou DATE _____

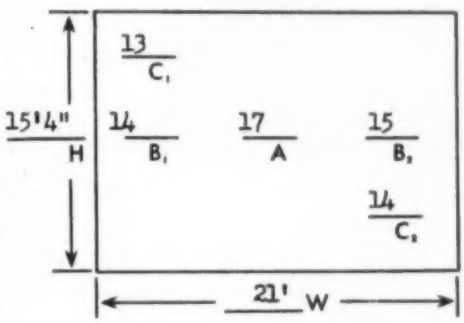
ADDRESS Main Street REPORTED BY John Doe

U. S. A.

PROJECTOR 1



PROJECTOR 2



Notes

(a) "C_1" and "C_2" are located approximately 1/20 of H from the top and bottom edges, and 1/20 of W from sides, "B_1" and "B_2" are on the horizontal center and 1/20 of W from sides. "A" is in the exact center.

(b) These measurements must be made with a standard aperture in the projector.

(c) On standard screens the ratio of H to W is .73 (H/W = .73). Therefore you may measure the width of your screen (if not known) and to find the height (H) just multiply W by .73.

(d) Readings are to be taken without any film in the gate.

(e) All readings are made by holding the light meter parallel to and a few inches away from the screen, and facing the beam of light.

Screen Area

Area in square feet = H × W = 322 (1)

Screen Light Intensity and Distribution

Side-to-Center ratio $\frac{B_1 + B_2}{2} \times \frac{1}{A} = 86\%$

Corner-to-Center ratio $\frac{C_1 + C_2}{2} \times \frac{1}{A} = 71\%$

Screen Lumen Calculation

A × 2 = 28

$B_1 + B_2$ = 24

$\frac{C_1 + C_2}{2}$ = 10

Total = 62.0

Weighted Avg. = $\frac{\text{Total}}{5}$ = 12.4 (2)

Screen Lumens = (1) × (2) = 4000 (3)

Screen Lumens without shutter = (3) × 2 = 8000 (4)

Screen Area

Area in square feet = H × W = 322 (1)

Screen Light Intensity and Distribution

Side-to-Center ratio $\frac{B_1 + B_2}{2} \times \frac{1}{A} = 85\%$

Corner-to-Center ratio $\frac{C_1 + C_2}{2} \times \frac{1}{A} = 79\%$

Screen Lumen Calculation

A × 2 = 34

$B_1 + B_2$ = 29

$\frac{C_1 + C_2}{2}$ = 13.5

Total = 76.5

Weighted Avg. = $\frac{\text{Total}}{5}$ = 15.3 (2)

Screen Lumens = (1) × (2) = 4950 (3)

Screen Lumens without shutter = (3) × 2 = 9900 (4)

IN THE

SPOTLIGHT

A NEW ruling, recently handed down by the National Labor Relations Board concerning the setup of voting units for collective bargaining purposes at Tv station WXEL in Cleveland, Ohio, is hailed as an important victory for the IATSE. Heretofore, in establishing such units, the NLRB made no distinction in classifying projectionists, Tv cameramen, and electronic engineers, although the latter group has always had its own union representation. As a result, the projectionists and the cameramen invariably were outvoted and were placed at a disadvantage in applying for jobs in the Tv studios.

This most recent decision by the Board holds that projectionists, cameramen, and microphone boom men, under the type of operation carried on by station WXEL properly belong in the program unit, which is made up of employes who put on shows. The IA long has been recognized as the predominant union in the entertainment world — in stage, screen, and Tv work.

In its petition seeking classification of the projectionists, cameramen, and microphone boom men with the program group, the IA was opposed by NABET (National Association of Broadcast Engineers and Technicians) which sought to have them classified with the engineering group. In its ruling the Board declared: "We are convinced that the studio crewmen and projectionists, with the other program employes mentioned (newsreel cameramen, art designers, scenic designers and floor managers) constitute a homogeneous group which may, if the employes so desire, be represented apart from the engineers."

The Board specified that elections to choose collective-bargaining representatives for the two units established shall take place some time prior to September 28.

• Dubuque, Iowa, Local 103 recently observed its 50th anniversary. L. W. Brown, business representative, is the last of the original charter members of the Local.

• Stewart Seifert, member of Local 203, Easton, Penna., is serving his 22nd consecutive term as secretary to the Central Labor Union of Northampton and Warren Counties (with headquarters in Easton). Seifert has represented the CLU at practically every AFL convention since 1933.

• The General Executive Board of the IATSE elected Harland Holmden, first vice-president, as secretary-treasurer to succeed William P. Raoul, who has been ill since early this year and is prohibited by his physician from continuing with his official duties.

Harland Holmden, a member of Cleveland Local 160 since 1908, was the Local's business representative for many years until he resigned last Spring to serve as assistant IA president, following the death last January of Assistant President Thomas J. Shea. Holmden has been a vice-president of the Alliance since 1931 and down through the years has been called upon to perform a variety of special services.

• Four members of Local 440, St. John, N. B. were honored by the presentation of long-service pins at the semi-annual meeting of the Local, which was held recently at the Brunswick Hotel in Moncton, N. B. The presentations were made by William E. Touchie, president of the Moncton District Trades and Labor Council. The recipients, all former presidents of the Local, were James A. Whitebone, Leslie A. Sprague, Wilmot J. Chase, and Edmund A. Chase.

Whitebone has been a member of the Local for 35 years and has served as its secretary and business representative for the last 31 years; Sprague and Edmund Chase have been members for 30 years, and Wilmot Chase for 32 years.

• The resignation of Roy M. Brewer, IA West Coast representative, was formally accepted on September 12 by IA President Richard F. Walsh. Carl G. Cooper, 5th IA vice-president, was named as temporary replacement.

For the past eight years Brewer represented the Alliance in Hollywood labor negotiations and he played an important role in the expose of Communist elements in the motion picture industry. His resignation was due to a disagreement with President Walsh over the future conduct of IA activities on the West Coast. Pending contract negotiations with the Association of Motion Picture Producers will continue with Carl Cooper as the IA top representative.

• Overcoming many obstacles, the Movie Craft Federal Credit Union, which was organized early this year by only seven members of Local 182, Boston, Mass., now boasts of a membership of 45 and assets of $2,000. The organization serves as a savings and credit agency for its members. All members of IA Locals in Greater Boston are eligible for membership.

David Kaplan, one of the original

W. E. Touchie, president of the Moncton, (N.B.) District Trades and Labor Council is shown pinning a long-service award on the coat lapel of Edmund A. Chase, member of St. John Local 440. W. Edward Laird, vice-president of the Local, is in the center. Other Local 440 pin-winners, standing in front of the group, are Leslie Sprague, Wilmot J. Chase, and James A. Whitebone.

sponsors of the Credit Union, is a member of the board of directors, and Henry Perry is the president. Other officers of the organization are Morris Rotman, vice-president; Jack Rosenberg, treasurer; Myer Rosen, Benjamin Bearman, Frank Labby, credit committee; Hebert Goldstein, Fred Jones, Sam Dinerstein, supervision committee; Anthony Phillips, Solomon Zitter, Hyman Bornstein, J. Rosenberg, B. Bearman, and H. Perry, members of board of directors.

• The New York State Association of Motion Picture Projectionists will hold its annual Fall meeting on Monday, October 5, at the American Legion Home in Geneva, N. Y. A double anniversary will mark this day—Geneva Local 108 will celebrate its 50th anniversary, and the State Association will observe its 25th.

• *Out-of-Town Visitors to IP Offices:* Merle Chamberlin, member of Local 165, Hollywood, Calif., and projection supervisor at the M-G-M studios in Culver City, dropped in and gave us the low-down on many interesting developments now brewing on the West Coast. William Robacher and W. Tines, of Local 311, Middletown,

(Continued on page 26)

IA Delegation Visits Will Rogers Memorial Hospital

IA delegation to the Will Rogers Memorial Hospital is welcomed by a committee from Local 749, Malone, N. Y., which has jurisdiction over the Saranac Lake area. Pictured above, left to right, are the following members from the Malone Local: Frank Kawatch, Cornelius S. Clifford, Shirley C. Houff and Carl N. Parsons, vice-president. Continuing, Robert Stott, member of N. Y. C. Local 1, former patient at the hospital who returned with the IA tour for a check-up; Earl J. Amo, president; Owen F. McCooey, secretary, Local 749; IA President Walsh, James J. Brennan, 2nd IA vice-president; Arthur Nacashian, business representative for Local 749; Albert T. Brown, president, Local 21, Newark, N. J.; Thomas Murtha, business representative for Brooklyn Local 4, Edward A. Connelly, business representative, Local 116, Trenton, N. J., and Frank Mandrake, president, Local 384, Hudson County, N. J.

HEADED by President Richard F. Walsh, a delegation of 150 IA men from 14 states chartered a special train to Saranac Lake, N. Y., on August 26 and spent a full day visiting the patients at the Will Rogers Memorial Hospital. The IA visitors were deeply impressed by the comforts and facilities furnished the patients and they were enthusiastic in their praise for the progress being made at the institution.

IA Members Treated

During the past four years, 35 IA members were taken in and cured at no cost to themselves, reported Charles E. Lewis, executive vice-president of the hospital. Average cost to the hospital was $60 per week over an extended period. Lewis emphasized that every precaution is taken to avoid the stigma of charity, each patient being furnished with a private room and bath, and a private porch.

President Walsh, who is a vice-president of Variety Clubs-Will Rogers Memorial Hospital, presided at a luncheon meeting where problems of financing the costly hospital program were discussed. Following the luncheon, Walsh was presented with a replica of the plaque on the door of the room dedicated in memory of Thomas J. Shea, assistant IA president, who died at the hospital last January.

The committee handling arrangements for the "IA Day" consisted of Thomas Murtha, business representative of Brooklyn Local 4; Vincent Jacobi and Joseph McCarthy, New York Local 1, and Ernest Lang, secretary for New York Local 306.

IA President Walsh, left, and Thomas Murtha, chairman of arrangements for the IA Day, examine replica of placque placed on the door of a hospital room as a memorial to the late Assistant President Thomas J. Shea.

Representing New York Local 306, left to right: James Ambrosia, Steve D'Inzillo, N. Y. C. business representative; Harry Garfman, Brooklyn business representative; Izzie Schwartz, financial secretary; Max Kessler, and Ernest Lang, secretary.

Mayor Tony Anderson of Saranac Lake (an exhibitor) greets President Walsh at hospital luncheon. Seated, left to right: Dr. Homer McCreary, staff physician; Harland Holmden, IA General secretary-treasurer, and Abe Montague, president of the Will Rogers Hospital.

STEREOSCOPIC PROJECTION

(Continued from page 10)

make each sound hole a very short hollow cylinder. Reflection of light from the walls of these multitudinous cylinders, or from crater-like formations of aluminum paint encircling them, results in depolarization and conspicuous ghosts.

For the best results, the 3-D screen should not be perforated at all. But because the output power and frequency characteristics of many theatre sound systems cannot be modified to give good sound with solid screens, perforated screens are usually necessary. Such screens should be painted first and perforated afterward by means of very sharp dies that do not "cup" the screen around each hole. Ragged and cupped sound holes depolarize light, hence a 3-D screen should have clean-cut perforations and exceptional flatness.

Since certain makes of sound screen utilize the principle of cupped holes for superior sound distribution, this very important matter should be brought to the attention of every exhibitor contemplating the purchase of a new screen for 3-D showings. *The projectionist should carefully examine samples and okay the screen before it is installed.*

The screen-illumination problem is particularly serious in polarized-light projection. The use of two projectors simultaneously does not double apparent picture-brightness because the patron, wearing Polaroid viewers, sees the light of only one projector with each eye. So even though two machines are operated at the same time, "effective light" is that furnished by one projector *minus the large losses occasioned by two thicknesses of Polaroid*, one thickness over the projector lens and the other over the eye of the observer.

The Polariod projection and viewing filters in use at the present time transmit only 40 percent of non-polarized light, wasting 60 percent by absorption and reflection. But Polaroid is able to transmit 70 percent of polarized light vibrating in the plane of the filter axis. So with two thicknesses of Polaroid, only 28 percent of the light gets through to the eyes of the audience, fully 72 percent being wasted! The specular reflecting characteristics of the aluminum screen compensate for this terrific loss of light only partially.

Not a "One Man" Job

A very serious disadvantage of the two-strip 3-D system in theatres not having four or more projectors is the necessity of intermissions for changing reels. Even with 5,000 foot reels running from 50 to 55 minutes, there must be a mid-feature break.

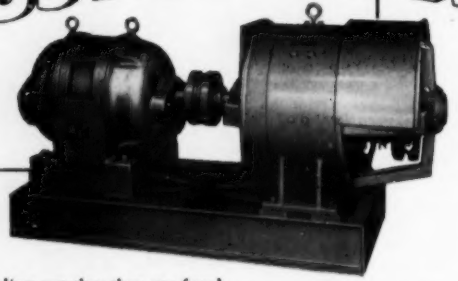
The projectionist, however, suffers even more than the public. His troubles begin with the inspection of the newly-arrived prints and continue unabated until the last frame passes by the aperture. The work of repairing two stereo prints, which must correspond frame by frame throughout thousands of feet of film, can be, and usually is, tremendous.

It goes without saying that two-strip 3-D is not adapted to "one-man" projection rooms and it is difficult to guarantee even reasonably good projection without three projectionists, or four when a stereophonic recording on a separate film is used.

[TO BE CONTINUED]

A HERTNER TransVerteR FILLS THE BILL IN MEETING ALL POWER REQUIREMENTS FOR . . .

3-D PROJECTION



Exhibitors everywhere are finding out that they are faced with new problems when 3-D equipment is installed. One of the chief obstacles is getting increased amperage and additional screen illumination to meet the basic needs of 3-D projection.

Loss of light through use of filters plus giant screen sizes makes existing projection equipment inadequate to do the job.

Manufacturers have increased carbon-arc amperage and voltage requirements up to 50% for 3-D projection, hence additional power is mandatory.

Fortunate are theatre operators, for Hertner has tried and proven motor generator units that more than meet the maximum power requirements of 3-D projection. One of these is the "CP" TransVerter that has been widely accepted for use in large theatres and drive-in theatres.

Distributed by: NATIONAL THEATRE SUPPLY
In Canada: GENERAL THEATRE SUPPLY COMPANY

In addition to the "CP" TransVerter Hertner manufactures five other types of TransVerters for theatres of all sizes.

THE TRANSVERTER LINE INCLUDES:

TYPE "LV" for Simplex HIGH 1 KW Arcs.

TYPE "HI" for Suprex Type Arcs.

TYPE "HIH" for Suprex and Spot Arcs.

TYPE "HS" for 50-63 Volt High Intensity and Spot Arcs (for National Excelite 55,000 type lamp).

TYPE "MA" for 50-70 Volt Low and High Intensity Arcs.

TYPE "CP" for 60-75 Volt High Intensity Arcs.

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OBITUARIES

MACE BROWN, 58, member of Local 343, Omaha, Nebr., succumbed to a heart attack on August 3 last. He joined Local 343 back in 1917 and at the time of his death was employed in the projection room of the Town Theatre in Omaha.

IRA BALDRIDGE, 52, member of Local 204, Little Rock, Ark., since 1927, died August 28 in the Baptist Hospital. He had been in ill health for the past several months but prior to his illness he was chief projectionist at the Capitol Theatre, a position he held for a number of years. Baldridge served Local 204 as business representative and as vice-president and was well known in IA circles throughout the Alliance. He is survived by his wife and three sons, one of whom, Robert Ira, is a member of the Local.

VERNON E. HOSTETTER, 59, member of Local 228, Toledo, Ohio, died early this month after a ten-day illness. He was a member of 228 since 1914 and served the Local in various official capacities. Hostetter worked in several theatres in Toledo, the last being the Esquire, a position he held for the past ten years. He is survived by a son and daughter, and several stepsons and stepdaughters.

GLENN L. WAGNER, 56, member of Denver Local 230, died recently after a short illness. He was born in Fruitdale, Colo., and was a veteran of World War I. Survivors are his wife, a son, and a sister and brother.

MILTON STRAUSS, 43, member of Local 650, Westchester County, N. Y., since 1936, died suddenly. Strauss was also a member of Stagehands Local 366, Westchester County.

Altec Stereo to Loews

Installation of stereosound systems in ten Loew theatres in New York and Brooklyn has been completed under the supervision of C. S. Perkins, Altec Service Corporation Northeastern division manager. The houses are the Paradise, 175th Street, Victoria, 83rd Street, 72nd Street, Lexington Theatres in New York City, and the Valencia, Kings, Pitkin, and Gates in Brooklyn.

Informal instruction periods covering the systems were conducted by Altec technicians at the Paradise, Kings, and Pitkin. Field representatives and engineers working on the installations were Fred Hall, R. W. Kautzky, S. N. Trent, G. W. Evans, F. A. Brown, R. Siegel, together with J. T. Eves and C. A. McCrork, Eastern division branch managers in Washington, D. C., and Philadelphia.

The stereoscope, an apparatus by which the effect of depth was given to pictures, was invented in 1819 by Sir David Brewster.

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Every day, more and more people are turning to motion pictures for fine entertainment.

Now, with the equipment picture taking a positive upward turn — why not look ahead with National. National Theatre Supply has been caring for the needs of exhibitors for over 27 years . . . and whatever your need, when it's available, **National will have it!**

We may not have all the answers — but there's one thing we do know and that is theatre needs. So — for real service, for the finest for your every equipment and supply need, place your faith in National — and face the future with confidence!

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with SUPER SNAPLITE

f/1.9 Projection Lenses

...and "Showmanship" includes your plant equipment. Super Snaplite f/1.9 Projection Lenses give *your* patrons maximum viewing satisfaction.

For Better Showmanship and Better Boxoffice use Super Snaplites. True speed of f/1.9 in all focal lengths up to 7 inches.

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KOLLMORGEN Optical CORPORATION

Plant: Northampton, Massachusetts

NEW YORK OFFICE: 30 CHURCH ST., NEW YORK 7, N. Y.

Simplex Now Producing CinemaScope Soundhead

Production of the new Simplex X-L magnetic reproducer for use with CinemaScope and other single-film magnetic stereophonic sound systems, is in full swing, according to Walter E. Green, president of National Theatre Supply. Mr. Green stated that the Simplex X-L has been chosen by 20th-Century Fox for the world premieres of "The Robe" at the Roxy Theatre, New York City; Grauman's Chinese Theatre, Hollywood, and for premieres in key cities throughout the country.

Developed by International Projector Corp. engineers in collaboration with General Precision Labs., both affiliated with National Theatre Supply, the new soundhead is designed for maximum ease of installation. It needs no drive motor or mechanical coupling, since it is completely film-driven. Pre-amplifiers, effects switch and power supply are plug-in units, mounted in compact, ready-to-install wall cases. Because of its easy adaptability to standard projectors, it is expected to find ready acceptance by exhibitors.

The X-L magnetic reproducer weights but 24 pounds, and measures 9" in width, 13" in depth, and 4" in height, the most an upper magazine would need to be raised for installation of the unit. For this reason, and because it is offset towards the back, the new soundhead allows for more head room and front wall clearance. Adequate clearance for threading for optical sound, by-passing the magnetic head, is provided for and easier film loading is made possible. The X-L employs the "tight loop" system, the accepted standard used by studio recording systems.

The film speed stabilizing system, with the main stabilizing drums made of non-magnetic, hardened, ground stainless steel, holds flutter down to less than one-tenth of one percent.

The manufacturing facilities of International Projector Corp., long one of the leaders in projection and sound equipment, have been expanded to handle the numerous orders already placed for this new soundhead.

Victor Animatograph Moves

The New York office of the Victor Animatograph Corp., Davenport Iowa, has been moved from 330 West 42nd St. to new and larger quarters at 551 Fifth Ave., it is announced by Sam. G. Rose, president. The New York office is headed by Horace O. Jones, vice-president.

Increased activity in the sales, manufacturing and export fields dictated the move, Mr. Rose said.

Projectionists' Aid Sought In Survey

BOYCE NEMEC, executive secretary of the Society of Motion Picture and Television Engineers, compares the present headlong rush of the film industry into new systems with a ship under full steam racing through an ice field without radar.

"It will be just plain dumb luck if we don't smash into something," Nemec told *International Projectionist*. Mr. Nemec, through IP, appealed to projectionists throughout the United States and Canada to help jog exhibitors into action on the current theatre survey now being conducted by the SMPTE.

The survey, launched in May at the urgent request of many segments of the motion picture industry, has been lagging badly, Mr. Nemec said, "perhaps because theatre owners are mightily occupied with immediate day-to-day problems."

As of September 1, only 275 replies had been received although many thousands of questionnaires had been mailed. Many more must be answered before any valid study can be made and conclusions, vital to the industry, drawn. Immediately following World War II, Mr. Nemec said, SMPTE sought the help of projectionists in a survey on screen brightness and "received 100 per cent cooperation," in sharp contrast to the apathy of exhibitors in the present survey.

Briefly stated, the Society wants to know how many theatres are equipped for 3-D, wide-screen projection and stereophonic sound. Also, what are the physical limits to which producers and equipment suppliers can go in developing the new systems.

Admitting that the survey questionnaire, is a bit complicated, Mr. Nemec pointed out that many of the questions asked can be answered by the projectionist. The projectionist, he said, knows offhand the focal length of his lenses, the size of his picture inside of masking, and the answer to many of the other questions asked.

Other than the expenditure of three cents for a stamp, Mr. Nemec said the survey costs the exhibitor nothing. In the event that some of the theatre measurements may be a little difficult to take, expert technical help may be a little difficult to take, expert technical help may be obtained free from the Altec and RCA service companies, from all members of the Theatre Equipment Dealers Association and from all branches of National Theatre Supply.

Because the projectionist is usually the only available technical expert in the theatre, and because his advice is sought whenever new equipment is needed, the SMPTE feels that he is in a position to prod the theatre owner into action on the survey which, the Society holds, is vital if some order is to be brought out of the present chaos.

If, by any chance, the theatre owner has mislaid the copy of the survey questionnaire mailed to him, or if he hasn't received one, copies may be obtained by dropping a post card to Henry Kogel, Staff Engineer, SMPTE, 40 West 40th St., New York 18, N. Y.

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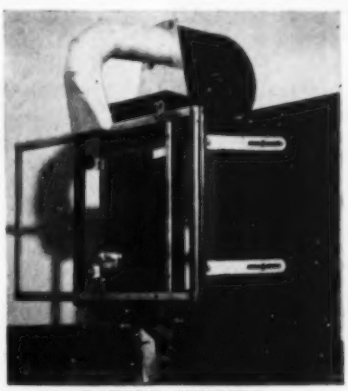

PATENT PENDING

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This mechanism has sufficient width to accept the wide angle projection of Cinerama or CinemaScope. For standard projection, all the projectionist has to do is to slide filter to non-operating side.

Bottom of housing slants downward at a 25-degree angle toward screen (for indoor theatres) so that regardless of the angle of projection, the beam will pass through freely. For Drive-In Theatres the slant is upward so that the beam will pass through freely to the screen tower.

The filter frame has eight adjustments, so that the filter may be placed in proper position for maximum light and focus — AND LOCKED. These eight adjustments are:

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Left or Right at angle to horizontal

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IN THE SPOTLIGHT

(Continued from page 21)

N. Y. also stopped by to say "hello" and to renew their subscriptions to IP.

• E. O. Wilschke, operating manager of Altec Service Corp. celebrated 25 years service with the company last month at a party tendered in his honor at Altec's New Orleans branch office. Wilschke stopped off at New Orleans on a coast-to-coast itinerary for the company. Bruce Mewborn, branch manager, and field engineers W. Y. DeJarnette, Duke Chambers, and James Skelly, Jr., were among the Altec personnel taking part in the celebration.

E. O. Wilschke, operating manager for Altec Service Corp.

• Wally Byrne, former New York business representative for Local 306, has been named chief projectionist of Loew's State Theatre, the circuit's key house in NYC, by M. D. O'Brien, projection supervisor for all Loew's houses. Although the appointment has only recently been made official, Wally has been acting chief projectionist for the past three years.

• In a signed article appearing in the *New York World-Telegram and Sun* last month, IA President Richard Walsh declared his optimism on the stabilization of labor in the many problems arising incident to the introduction of the new wide screen and 3-D techniques. "In many places, increased manpower has been required to handle the new dimensions, with the employer radily recognizing that fact," stated Walsh. "Preparing the show each day has called for some additional time — the problem of shifts had to be adjusted," he continued. "These and other business matters are being ironed out in the routine, with almost a complete absence of labor trouble. Through our organization, certain general standards have been quickly established."

President Walsh further added "Technological stability has been far more difficult to achieve . . . Conflicting methods of spreading the picture over the screen still vie for acceptance. Gradually a set of standards is beginning to emerge but there has been a good deal of confusion."

Movie Scripts for Blind

Long-playing records, known as Sightless Cinema, designed to enable the blind to enjoy motion picture scripts were demonstrated in New York recently. The sound track of "Detective Story" as recorded by RCA with explanatory interpolations to cover the action in the picture, was used in the demonstration.

The Sightless Cinema organization will operate through a system of 30 public library exchanges providing free service from coast to coast.

Reissue of 3-D Specs Banned

The Chicago Board of Health has sent telegrams to theatres in that city forbidding the reissue of Polaroid glasses to patrons of 3-D movies. The action came after a check of 15 pairs of glasses resulted in the charge that they harbored organisms that might cause infections of the eye, skin or throat.

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DOES CINEMASCOPE HAVE THE A SWER?

(Continued from page 8)

time of ordering soundheads and other parts to avoid later delays and troubles. In some cases, as with old or orphaned equipment, the installation may require some mechanical work on the projector to permit the installation of the soundhead.

Demagnetizing of Parts

Again, at this point, Fox advises that all new parts be demagnetized before installation to eliminate any residual fields which might result from manufacture or handling. The company adds that a takeup adjustment that is too tight will cause nicking on the back edge of the sprocket perforations. Large hub reels minimize this possibility.

Because of the peculiarities of CinemaScope, some standards have been changed. For this reason, and because of the amount of space used by the picture image and by stereophonic sound, some additions and modifications of the projection room equipment must be made.

For example, to accommodate the quartet of magnetic sound tracks, the sprocket holes of standard 35-mm film have been narrowed from .110 to .078 inches. This was done because of many advantages in the smaller size. Mr. Sponable pointed out that the old standard is a throwback to the days of nitrate film with its high propensity to shrinkage. Modern acetate film shrinks but slightly and the large holes are no longer necessary. The CinemaScope sprocket size is entirely compatible with all film now in use, with the exception of some very old and badly shrunk nitrate film. Therefore, *all* the sprockets, and perhaps some of the keeper and pad rollers as well, *must be changed* for CinemaScope.

While the projectionist does not have to worry too much about the changeover to CinemaScope, that job being largely in the hands of the field representatives and engineers of the suppliers, he does have to worry about his film handling equipment.

Splicer Changes

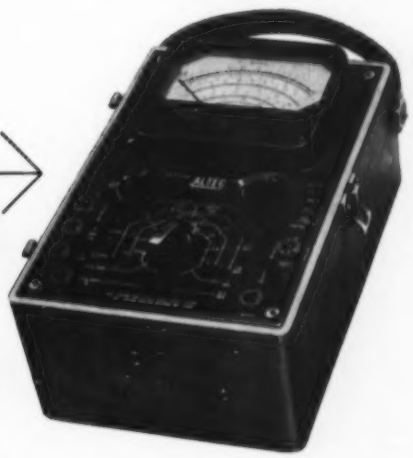
Film splicers ordinarily are equipped with register pins and these must be changed or new equipment obtained. Again, the company points out, any change which is made will permit the handling of existing product either from Fox or from other companies.

Sprocket driven footage counters must have the sprocket tooth width and spacing modified. With most devices of this kind it is sufficient to machine off the inside surfaces of the teeth.

Also, it is desirable, but not mandatory, that aluminum reels be used, particularly when using 2,000-foot spools. Aluminum reels, Fox points out, particularly the cast versions, generally maintain their shape and there is no possibility of introducing noise into the magnetic soundhead because of incipient magnetization of the reels. It is strongly recommended that badly misshapen reels be not used since they can easily cause uneven winding which aggravates the possibility of edge damage, a doubly important consideration in the case of CinemaScope because of the two outer sound tracks.

So much for the CinemaScope

the right tool FOR THE JOB



Using the wrong tools or makeshift substitutes makes any job more expensive because it takes longer and the result may not be up to standard. The Altec Service meters are the right tools for the testing and servicing of your booth and sound equipment. They are carried by every Altec Service Man. These meters were designed in Altec's laboratories after years of experience in theatrical service. They represent an investment of thousands of dollars in engineering and manufacturing—an investment that saves you money because it helps your Altec Service Man to do his job right. Rely on Altec. It's the finest technical service for theatres.

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sound, and now to the problem of light!

Obviously, Fox engineers faced the difficulty inherent in any big screen projection system, how to increase screen illumination so as to get a bright picture over a wider area. Despite Miracle Mirror and Astrolite screens, both pushed by Fox, it appears that projectionists will have to jump the light at the source and, as with 3-D, this means increasing the amperage. Only tests under specific conditions in each individual theatre can turn this trick properly. Projectionists are referred to the article on screen illumination on page 18 of this issue of IP.

Some details anent the Miracle Mirror screen were given in the August issue of IP in the article on "Converting Theatres for CinemaScope." This screen has "an embossed surface containing myriads of tiny reflecting mirrors that have been arranged in predetermined forms with predetermined accuracy by exquisitely engraved embossing rollers." Fox claims that this screen actually doubles the amount of light reflected back to the audience. The company also states that this screen, as well as the Magniglow Astrolite, is ideal for conventional third dimension projection, solving much of the light problem. Both screens are of the "controlled reflectance" type and, according to Earl Sponable, will not depolarize when used for 3-D pictures.

The Projection Lens

The heart of CinemaScope, however, is the anamorphic lens, used both in the filming of the picture and in the projection. For projection, the CinemaScope optics have been designed as frontal attachments to the regular projection lenses. They represent an approximate 6½ inches of extension beyond regular lenses with a diameter of 2-25/32 inches, and an approximate 9½ inches in the case of lenses with a four-inch diameter. It is essential for CinemaScope that lenses be of top quality.

Complete instructions on the use of the CinemaScope optics are available from the suppliers and need not be gone into here. Once they are properly adjusted they stay that way but, if necessary, they can be readjusted and relocked by the projectionist. This is by means of a helical rack and pinion.

CinemaScope may seem a bit complicated at first, but in actual projection room practice it is really quite simply handled. As can be seen from the foregoing, there are problems — and, even Fox admits, others may arise. Splicing, for example, offers certain difficulties. Film must be properly scraped and a cement used that will not dissolve the sound track. However, there is no problem of sync as in the case of sound on a separate film. There is no problem of picture sync as in the case of two-film third dimension. What is more, the industry trend at the moment seems to be toward wide-screen and the anamorphic lens, and to the single film magnetic sound system.

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Motiograph Adds Ten

Motiograph announced this month that its stereosound system will shortly be installed at the Strand Theatre in New Orleans and in 5 other theatres in the Gulf area. The company also reported the pending installation of its stereosound system in 2 Oregon theatres — the Molalla Theatre, Molalla, and the Rivoli in Pendleton.

Republic's Aspect Radio

Republic Pictures has adopted the aspect ratio of 1.66 to 1 as its standard for wide-screen pictures. The actual frame size of the film will not be altered by the studio, so that the 1.66 to 1 standard will permit projection in a number of screen proportions ranging from the conventional 1.33 to 1 up to 1.85 to 1, if the theatre so desires.

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REBIRTH OF A THEATRE

(Continued from page 13)

tom switches are the interlock selectors. Directly below the interlock selectors are the interlock control switches, two for "red control" and two for "blue control."

148-Foot Throw

The throw from the aperture to the screen is 148 feet. Use of the 24 by 42-foot Daylight screen with this throw made it necessary to get a higher amperage for more light so the Huff coolers were installed, using 9-mm by 20-inch black carbon positive and 8-mm by 9-inch copper-coated negative carbons. This enabled the Peerless Magnarc setup to cover the screen at 80 amps. The permanent magnets of the coolers pulled down the tail flame, thus increasing the light and reducing carbon consumption. Four pairs of red and green pilot lights, located at the bottom of the interlocking panel, were connected to the water coolers by means of pressure switches. As an additional safety device these pilot lights change from red to green when the water is turned on at each lamp.

The old 80-160 amp generator is used on the No. 2 and No. 3 lamps, and the McColphin Christie 90-amp 3-phase rectifiers are used on the No. 1 and No. 4 lamps. By means of a switching arrangement it is possible to interchange the generators or rectifier to any lamp. At present, all four lamps are pulling 80 amps and approximately 38 volts at the arc.

It must be remembered that, as completely separate systems, the optical and magnetic stereophonic systems each have their own faders, monitors, amplifiers and speakers. The theatre's original optical system contains the RCA Model 242 projector. The optical sound heads are located on the two inside machines, No. 2 and No. 3. The speakers for the theatre are located directly behind the center of the screen and are the standard RCA 242 speaker setup.

The Sound System

For the stereophonic sound system, Goldstein installed Simplex sound heads on No. 1 and No. 4 machines. A triple magnetic reproducer (See page 5), located just below and forward of the standard scanner, was installed inside each soundhead. This reproducer, perfected by Walter McCormick, a member of Hollywood Local 165, permits the head to be threaded either optically or magnetically. Each reproducer, which can be installed on either Simplex or RCA sound heads, has three pre-amplifiers attached to it, marked "left", "center" and "right." The rack has four 50-watt Atlas amplifiers, including one spare.

The three sets of speakers backstage are Altec Lansing A-4's. The sound changeover is located between the No. 2 and No. 3 machines. The monitor for the stereophonic sound system is installed in the center of the projection room beside the optical monitor. The twelve effect speakers are located throughout the theatre and are controlled through the optical system.

During the regular performance the projectionists are called upon to change lenses and apertures for effect in presentation. Thus the theatre patrons are given spot demonstrations of both standard and large screen presentations. Next to each machine is a complete set of four different aperture sizes — standard, 166, 175 and 185. For 3-D features permanent Polaroid filters are used. These are set in metal frames and can be removed easily from the ports. No automatic masking is used but an effect slide is used to give the effect of drapery around the picture.

History was made at the Picwood when "Kiss Me Kate" was presented. This 3-D stereophonic sound picture was run continuously on 1000-foot reels.

PERSONAL NOTES

F. T. Bowditch has been appointed associate director of research of the National Carbon Research Laboratories, Cleveland, Ohio. Mr. Bowditch has been associated with the National Carbon Co. since 1920, and has carried out extensive studies of the properties of the carbon arc, particularly in its application to motion picture and Tv projection. He has been active in the Society of Motion Picture and Television Engineers, recently serving as engineering vice-president of that group.

David S. Greenlaw has been named assistant director of the color technology division of the Eastman Kodak Co. The company also announces the promotion of George H. Rieg to assistant superintendent of the Kodacolor processing division.

James C. White, president and general manager of the Tennessee Eastman Co. and head of the Texas Eastman Co., has been named to the board of the Eastman Kodak Co.

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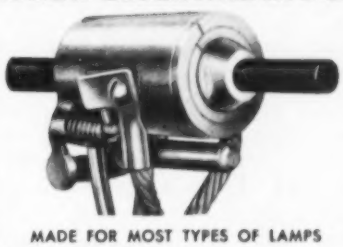

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CHECKING SCREEN LIGHT

(Continued from page 18)

justment knobs, clear the field as much as possible, to arrive at a light-field balance.

5. Explore the arc-to-mirror distance by moving the arc toward the mirror until the screen light becomes yellow; then away from the mirror until the light becomes blue; then toward the mirror again just into the white light zone where there is not too much fall-off at the edges of the screen.

NOTE: The gas ball of the carbon arc may be considered as a flat disc with a bluish arc stream in front and a yellowish shell to the rear. If the alignment distances, mirror-to-film-plane and mirror-to-arc are correct, the pure white light of the gas ball disc will be focused on the film plane and in turn on the screen by the projection lens.

Maximum Light Adjustment

Within its white-light range, when using a 7-mm Suprex positive at 45 amps, it is possible for you to vary your total within the white-light range by moving the arc toward or away from the mirror. The larger the carbon for a given mirror magnification, the greater this leeway of movement will be. As the arc is moved toward the mirror, you will find that the spot on the aperture plate becomes larger, the screen light distribution becomes flatter, and the total screen light is reduced. As you move the arc away from the mirror, the spot on the aperture becomes smaller, the side-to-center difference becomes greater, and the overall screen light is increased.

It is easily seen that if the crater gas ball is not facing the mirror correctly, it may be impossible to clear the light field at anything like maximum screen light. Therefore, if the plane of the crater is allowed to shift because of a short grip in the holder, or burned carbon savers, the probable result is that in attempting to operate where the least off-color light is noticed, you have set mirror-to-arc position where the largest spot is obtained on the aperture plate, and so at minimum light within the white-light range.

6. Secure lamp to base and recheck No. 1.

7. The position of the optical center of the mirror in relation to the center of the crater will usually be found to be satisfactory, but it can be checked roughly by measuring from the edge of the crater to the outside edge of the mirror at four equidistant points around the mirror circumference.

8. Check the position of the fire shutter and automatic dowser with the projector running. These should raise sufficiently to clear the entire light cone angle, from mirror to aperture.

As a final step it is necessary to redetermine the screen illumination by taking meter readings as described in the Research Council form. If all of the preceding instructions have been followed, you should obtain an average of between 80% and 100% of the top illumination.

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Typical port glass (plate glass) has a light transmission of from 92% to 86%. Inferior grades of glass or dust may lower this transmission considerably. If the surfaces of the glass are not exactly parallel, the picture may be distorted and out of focus over certain areas. Port glass light loss can be reduced to 2% or 3% by using a selected coated port glass. Information on this glass is available from the Research Council. This is a saving in light that is worth attention.

Projectionists desiring the blank data sheets for conducting these tests may obtain them from the Motion Picture Research Council, 1421 North Western Ave., Hollywood 27, Calif., or from the Society of Motion Picture and Television Engineers, 40 West 40th St., New York 18, N. Y. In the preceding article liberal use was made of information contained in "An Optical Alignment Check System," Charles W. Handley, *International Projectionist*, June, 1950; "Report on Screen Brightness Committee Theatre Survey," W. W. Lozier, *Society of Motion Picture and Television Engineers Journal*, Vol. 57, Sept., 1951; "*National*" *Projector Carbon Handbook*, 4th Edition, 1948.

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Then his M-1 jammed, with a ruptured cartridge in the breech. Fixing his bayonet, he leaped out of his foxhole and disappeared in the darkness toward the attacking Reds. They found him in the morning, wounded, ringed with enemy dead. But he had stopped the attack—*alone.*

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